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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/537,169

06/01/2005

Hiroshi Kashino

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22511 7590 09/04/2008  
OSHA LIANG L.L.P.  
1221 MCKINNEY STREET  
SUITE 2800  
HOUSTON, TX 77010

EXAMINER

SUITTE, BRYANT P

ART UNIT

PAPER NUMBER

1795

NOTIFICATION DATE

DELIVERY MODE

09/04/2008

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@oshaliang.com  
buta@oshaliang.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/537,169	<b>Applicant(s)</b> KASHINO ET AL.	
	<b>Examiner</b> BRYANT SUITTE	<b>Art Unit</b> 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 14 July 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____.                                     |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/1/05, 7/21/05, 12/14/06, 5/3/07</u> .                       | 6) <input type="checkbox"/> Other: _____.                         |



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**POWER GENERATING ELEMENT FOR LIQUID FUEL CELL, METHOD FOR  
PRODUCING THE SAME, AND LIQUID FUEL CELL USING THE SAME**

Examiner: Suitte

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August 21, 2008

***Election/Restrictions***

1. Applicant's election with traverse of Group I, Claims 1-11 in the reply filed on July 14, 2008 is acknowledged. The traversal is on the ground(s) that the application is a national phase 317 application, and the claims should be reviewed under unity of invention practice without regard to practice in national applications filed under 35 USC 111. This response is found persuasive and the restriction is removed.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuda et al. (US 2004/0115502) in view of Takeuchi et al. (US 4,894,355).

Regarding claims 1, 10, 12 and 16, Fukuda discloses an electric power generating polymer electrolyte fuel cell comprising a cathode (2b) (reducing oxygen), an anode (2a) (oxidizing fuel) and a solid electrolyte disposed between the anode and cathode. See figure 1. Fukuda further discloses a catalyst layer comprising a pore diameter range from 0.1 to 1  $\mu\text{m}$ . See paragraph 53. The catalyst is formulated by dispersing the catalyst layer in an organic solvent and then dried (removal of solvent) to formulate the catalyst layer particles (crushed particles). See paragraph 51. The method for producing a liquid fuel cell is disclosed above. Fukuda does not disclose a pore volume of the catalyst layer per se. However, it is the position of the examiner that the pore volume of the pore with respect to a total pore volume is inherent, given that the chemical composition of the electricity generating fuel cell disclosed by Fukuda and the instant application are similar. A reference which is silent about a claimed invention's features is inherently anticipatory if the missing feature is necessarily present in that which is described in the reference. Inherency is not established by probabilities or possibilities. In re Robertson 49 USPQ2d 1949 (1999).

Alternatively, the disclosure of Fukuda et al. differs from Applicant's claims in that Fukuda et al. do not disclose a pore volume of the pore is 4% or more with respect to a total pore volume. However, Fukuda et al. recognize the pore volume compared to the total pore volume is determined by the pore diameter size of a pore within the pore size range of 0.3 to 2.0  $\mu\text{m}$ . See figures 3a, 3b, 6a, and 6b. Therefore, it would have been

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within the skill of the ordinary artisan to adjust the size of the pore to yield a pore volume of the pore that is 4% or more with respect to total pore volume. *Discovery of optimum value of result effective variable in known process is ordinarily within skill of art. In re Boesch*, CCPA 1980, 617 F.2d 272, 205 USPQ215.

Furthermore, Fukuda does not disclose a thickness of the catalyst layers.

Tanaka discloses a fuel cell comprising catalyst layers with a thickness range of 0.1 to 10000  $\mu\text{m}$ . See paragraph 58. Therefore, it would have been obvious to one of ordinary skill in the art to utilize a catalyst layer with a thickness range of 0.1 to 10000  $\mu\text{m}$  as disclosed by Tanaka with the fuel cell of Fukuda because Tanaka teaches that a thickness smaller than 0.1  $\mu\text{m}$  makes it difficult to withstand the pressure during cell production and that for fuel supply. See paragraph 58.

Regarding claims 2, 13 and 17, Fukuda discloses a catalyst layer comprises platinum or platinum-ruthenium alloy (catalyst). See paragraphs 52 and 65.

Regarding claims 3, 4, 14, 15, 18 and 19, Fukuda discloses carbon black (conductive material) supports a platinum-ruthenium alloy. See paragraph 65.

Regarding claim 5, Fukuda discloses an oxidation catalyst (4b) that is disposed between the cathode (2b) and the electrolyte (3). See figure 1.

Regarding claim 6, Fukuda discloses a fuel cell comprising polytetrafluoroethylene (PTFE) (insulating material) and Nafion (proton conductive material). See 56 and 65.

Regarding claim 7, Fukuda discloses a backing layer 5 comprising a two-layer structure (not shown in the figure) formulated with a layer of the carbon black and a

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PTFE particle material. The backing layer supports the oxidation catalyst layer. See paragraph 57 and figure 1.

Regarding claim 8, Fukuda further discloses a catalyst layer comprising a pore diameter range from 0.1 to 1  $\mu\text{m}$ . See paragraph 55.

Regarding claim 9, Fukuda discloses an electric power generating fuel cell as recited above. However, Fukuda does not disclose a catalyst layer thickness.

Tanaka discloses a fuel cell comprising catalyst layers with a thickness range of 0.1 to 10000  $\mu\text{m}$ . See paragraph 58. Therefore, it would have been obvious to one of ordinary skill in the art to utilize a catalyst layer with a thickness range of 0.1 to 10000  $\mu\text{m}$  as disclosed by Tanaka with the fuel cell of Fukuda because Tanaka teaches that a thickness smaller than 0.1  $\mu\text{m}$  makes it difficult to withstand the pressure during cell production and that for fuel supply. See paragraph 58.

Regarding claim 11, Fukuda discloses a liquid fuel is a methanol solution. See paragraph 61.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRYANT SUITTE whose telephone number is (571)270-3961. The examiner can normally be reached on Mon-Fri 10-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on 571-272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BS

/Dah-Wei D. Yuan/  
Supervisory Patent Examiner, Art Unit 1795